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PATENT APPLICATION OF

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FOR

PHOTOVOLTAIC ATTACHMENT SYSTEM

15 BACKGROUND-FIELD OF INVENTION

The present invention relates generally to a photovoltaic mounting system. More specifically, the present invention is a mounting means for attaching photovoltaic panels on top of a building's roof.

20 BACKGROUND-DESCRIPTION OF RELATED ART

The collection of solar energy takes many forms. The most desirable configuration is the direct conversation of solar energy to electricity. The heart of the photovoltaic system is a thin flat layer of semiconductor material. When the material is struck by sunlight, electrons are freed,

producing an electric current. The direct-current (DC) power is passed through a DC load, into a storage battery, or converted to alternating current (AC) for general use in electric utility grid.

Typically, individual solar cells are ganged together to form photovoltaic modules. Typically, about half the cost of a solar system lies with the solar cell modules, and the remainder is

5 directed toward power conditioning, electrical wiring, installation, and site preparation.

The photovoltaic panels are usually mounted on top of a building's roof to allow the maximum exposure to sunlight and least interference to the use of the building itself. The conventional mounting method requires drilling of holes either into or through the roof of a building to mount the solar panels on top of the roof. This conventional mounting method often

10 results in leaks in the roof of a building due to improper sealing of the holes through the roof.

Furthermore, the conventional mounting method also weakens the roof structure due to the numerous holes that are drilled through the roof to attach the photovoltaic panels to the roof. If there are air conditioning and ventilations pipes and ducts on top of the roof, they create additional obstacles for the mounting of the photovoltaic panels on top of the roof using

15 conventional mounting methods.

SUMMARY OF THE INVENTION

The present invention is a photovoltaic attachment system for mounting photovoltaic panels on top of a building's roof. The attachment system does not require drilling of holes into

20 the roof and does not affect the integrity of the roof. The photovoltaic attachment system comprises of a grid of photovoltaic panels mounted on top of beams that are attached to the walls around the roof. No holes are drilled into or through the roof. The roof structure is not affected

and no leakage of water through the roof will result from the mounting of the photovoltaic panels.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Figure 1 shows a perspective view of the preferred embodiment of the photovoltaic attachment system.

 Figure 2 shows another perspective view of the preferred embodiment of the photovoltaic attachment system.

 Figure 3 shows a perspective view of another embodiment of the photovoltaic attachment
10 system.

 Figure 4 shows a perspective view of another embodiment of the photovoltaic attachment system.

 Figure 5 shows a perspective view of another embodiment of the photovoltaic attachment system.

15 Figure 6 shows the top view of a variation of the embodiment of the photovoltaic attachment system shown in figure 2.

 Figure 7 shows the top view of another embodiment of the photovoltaic attachment system.

 Figure 8 shows the top view of another embodiment of the photovoltaic attachment
20 system.

 Figure 9 shows the top view of another embodiment of the photovoltaic attachment system.

Figure 10 shows the top view of another embodiment of the photovoltaic attachment system.

Figure 11 shows the top view of another embodiment of the photovoltaic attachment system.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The current preferred embodiment of the photovoltaic attachment system is shown in Figure 1. In the preferred embodiment, the photovoltaic attachment system comprises of two beams **1, 2** that are positioned parallel to each other and attached at its ends **3, 4, 5, 6** to two opposite walls on top of a roof. Cross-beams **7** are positioned across and affixed to the two beams **1, 2** to form a grid in which photovoltaic panels **8** are attached. As shown in figure 2, the two parallel beams **1, 2** may be oriented parallel to the roof. The two parallel beams **9, 10** may also be oriented at a slope relative to the roof from one end to the other as shown in figure 3. This attachment system does not require any penetration of the roof and does not affect the structural integrity of the roof.

Another embodiment of the photovoltaic attachment system is shown in figure 4. In this embodiment, a pair of beams **11, 12** is positioned parallel to each other. One beam **11** is attached along its length parallel to one wall on the roof. The other beam **12** is attached to the two perpendicular walls to the first wall at its two ends **13, 14** and positioned parallel to the first beam **11**. Multiple cross-beams **15** are then positioned across and affixed to the two beams **11, 12** to form a grid in which photovoltaic panels **8** are attached. The beams **11, 12, 15** may be oriented parallel to the roof as shown in figure 4. The beams **11, 12** may also be oriented at a slope relative to the roof from one beam to the other beam as shown in figure 5.

Figure 6 shows the top view of a variation of the embodiment of the photovoltaic attachment system shown in figure 2. In this embodiment, the photovoltaic attachment system comprises of two beams **1, 2** that are positioned parallel to each other and attached at its ends **3, 4, 5, 6** to two opposite walls on top of a roof. The ends **3, 4, 5, 6** of the beams **1, 2** may be
5 attached to the walls on top of a roof by bolts that securely attach the ends **3, 4, 5, 6** of the two beams **1, 2** to the walls as shown in figure 7. The ends **3, 4, 5, 6** may also be securely attached to the walls by attaching them with bolts to concrete blocks **16, 17, 18, 19** that are affixed to the walls on top of a roof as shown in figure 8. Cross-beams **7** are positioned across and affixed to the two beams **1, 2** to form a grid in which photovoltaic panels **8** are attached. The two parallel
10 beams **1, 2** may be oriented parallel to the roof or may also be oriented at a slope relative to the roof from one end to the other. This attachment system does not require any penetration of the roof and does not affect the structural integrity of the roof.

Figure 9 shows another embodiment of the photovoltaic attachment system. In this embodiment, a pair of beams **20, 21** is positioned parallel to each other and each beam **20, 21** is
15 attached along its length to a wall that is parallel to the other wall on the roof. Multiple cross-beams **22** are then positioned across and affixed to the two beams **20, 21** to form a grid in which photovoltaic panels **8** are attached. The beams **20, 21, 22** may be oriented parallel to the roof or may also be oriented at a slope relative to the roof from one beam **20** to the other beam **21**.

Figure 10 shows another embodiment of the photovoltaic attachment system. In this
20 embodiment, a pair of beams **23, 24** is positioned parallel to each other. One beam **23** is attached along its length to one wall on the roof. The other beam **24** is attached to the two perpendicular walls to the first wall at its two ends **25, 26** and positioned parallel to the first beam **23**. The ends **25, 26** of the beam may be attached directly to the walls or may be attached to concrete blocks

27, 28 that are attached to the walls. Multiple cross-beams 29 are then positioned across and affixed to the two beams 23, 24 to form a grid in which photovoltaic panels 8 are attached. The beams 23, 24, 29 may be oriented parallel to the roof or may also be oriented at a slope relative to the roof from one beam 23 to the other beam 24.

5 Figure 11 shows another embodiment of the photovoltaic attachment system. In this embodiment, the photovoltaic attachment system comprises of two beams 30, 31 that are positioned parallel to each other and attached at its ends 32, 33, 34, 35 to concrete blocks 36, 37, 38, 39 that are positioned near two opposite walls on top of a roof. Cross-beams 40 are positioned across and affixed to the two beams 30, 31 to form a grid in which photovoltaic
10 panels 8 are attached. The two parallel beams 30, 31 may be oriented parallel to the roof or may also be oriented at a slope relative to the roof from one end to the other. This attachment system does not require any penetration of the roof and does not affect the structural integrity of the roof.

 Although the description above contains many specificities, these should not be construed
15 as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention. Thus the scope of the invention should be determined by the appended claims and their legal equivalents, rather than by the examples given.